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21. A color developing medium as set forth in claim 17, wherein each of said pressure-sensitive microcapsules are not broken when subjected to the predetermined pressure outside of said predetermined temperature range.

22. A color image-forming medium as set forth in claim 18, wherein each of said pressure-sensitive microcapsules are not broken when subjected to the predetermined pressure outside of said predetermined temperature range.---

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REMARKS

Initially, Applicants would like to express their appreciation to the Examiner for the detailed Official Action provided and for the acknowledgment of Applicants' Information Disclosure Statement by return of the form PTO-1449. Applicants note that the Examiner did not acknowledge Applicants' Claim for Priority or the receipt of Applicants' priority documents filed on June 26, 2001, although these priority documents were acknowledged on the Official Filing Receipt. Applicants respectfully request such an acknowledgment from the Examiner in the next official communication to Applicants. If the Examiner does not have a copy of any of the priority documents, Applicants will provide additional copies to the Examiner, if requested.

Upon entry of the present amendment, claims 1, 7-10, 12 and 14-18 will have been amended and claims 19-22 will have been added. Claims 1-22 are pending in the present application.

The Examiner has rejected claims 1-18 under 35 U.S.C. § 112, first paragraph, noting that the claims refer to dyes having a single color, while the disclosure discusses dye precursors which are colorless. Although Applicants respectfully disagrees with the Examiner's rejection under 35 U.S.C. § 112, first paragraph, in that those skilled in the art would readily understand the meaning

of the term "dye" from the specification and would therefore be enabled to make and use the present claimed invention, Applicants have, in accordance with a telephonic discussion with the Examiner on October 31, 2002, amended claim 1, line 11, and claim 17, line 15, from "dye exhibiting" to ---material corresponding to---, solely to expedite the patent application process in a manner consistent with the PTO's patent business goals, 65 Fed. Reg. 54603 (September 8, 2000). Therefore, Applicants respectfully request that the Examiner withdraw the rejection under 35 U.S.C. § 112, first paragraph.

The Examiner has rejected claims 7-10, 12, 14-16 and 18 under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner has determined that these claims refer to leuco-pigments which are dyes, and that dyes and pigments are distinct materials. Although Applicants respectfully disagree with the Examiner's rejection under 35 U.S.C. § 112, second paragraph, in that one skilled in the art would readily understand the meaning of leuco-pigment when reading the claims in light of the specification, Applicants have amended the above claims to recite ---leuco-compound---, rather than "leuco pigment," solely to expedite the patent application process in a manner consistent with the PTO's patent business goals, *id.* Therefore, Applicants respectfully request that the Examiner withdraw the rejection under 35 U.S.C. § 112, second paragraph.

Applicants note that the above-discussed amendments to the claims is to be considered merely a clarifying amendment that is cosmetic in nature, and is not intended to narrow the scope of the claims. This amendment should not be considered a decision to narrow the claims in any way. Rather, by changing "leuco pigment" to ---leuco-compound---, and by changing "dye exhibiting" to ---material corresponding to---, the above amendments have actually *broadened* the scope of the

present claims.

The Examiner has rejected claims 17-18 under the judicially-created doctrine of obviousness-type double-patenting over claims 1-9 of U.S. Patent No. 6,139,914 or claims 1-26 of U.S. Patent No. 6,161,971, finding that "although the conflicting claims are not identical, they are not patentably distinct from each other because one of ordinary skill in the art would recognize that each of the recited parameters would affect the property of heat transfer."

Applicants respectfully traverse the Examiner's double-patenting rejection. Specifically, in the invention of claim 17 (and the claims dependent therefrom), each microcapsule is broken when "subjected to a predetermined within a predetermined temperature range . . .", *i.e.*, between T1 and T2 at a predetermined pressure. However, the microcapsules *are not* broken outside of this temperature range at the predetermined pressure, as discussed *inter alia*, in the specification at page 23, lines 16-21, at page 24, line 19 through page 25, line 8, and at Fig. 5.

In the present invention, after the upper limit of the temperature range has been reached, the microcapsules *can no longer be broken*, which is possible due to the presence of the color-developing layer. The upper limit can be regulated by changing the thickness of the color developing layer, etc. This phenomenon is discussed in the specification, *inter alia*, at page 25, line 20 through page 26, line 5.

If a color image forming medium does not have a color-developing layer, as is the case with U.S. Patent Nos. 6,139,914 and 6,161,971, the microcapsules are broken at a predetermined pressure rather than at a predetermined temperature T2. Thus, an upper end of a temperature range after which microcapsules cannot be broken, is not determined in these references.

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Further, with respect to the Examiner's assertions that the "one of ordinary skill in the art would recognize that each of the recited parameters would affect the property of heat transfer," Applicants request that the Examiner cite at least one reference in support of this assertion, if the Examiner chooses to maintain these rejections. Accordingly, the Examiner is respectfully requested to withdraw the double patenting rejection of claims 17-18. Additionally, Applicants submit that newly added claims 19-22 are patentable over the applied references as well.

Thus, Applicants respectfully submit that each and every pending claim of the present application meets the requirements for patentability under 35 U.S.C. § 103 and 112, and respectfully request the Examiner to indicate the allowance of each and every pending claim in the present application.

SUMMARY AND CONCLUSION

In view of the fact that none of the art of record, whether considered alone, or in any proper combination thereof, discloses or suggests the present invention, and in further view of the above amendments and remarks, reconsideration of the Examiner's action and allowance of the present application are respectfully requested and are believed to be appropriate.

As discussed above, the amendments to the claims have not been made to overcome a rejection based upon the prior art, and should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

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Should the Examiner have any questions or comments regarding this Amendment, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
Minoru SUZUKI et al.

Will Boshart
Reg. No. 44,550 re-signed 7/10/03

Bruce H. Bernstein
Reg. No. 29,027

January 23, 2003
GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191

COPY

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MARKED-UP COPY OF THE AMENDED CLAIMS

1. (Amended - Marked-Up Copy) A color image-forming medium comprising:

a substrate; and

a color-developing layer coated on said substrate,

wherein said color-developing layer is composed of at least one kind of heat-sensitive color-developing component, and a plurality of pressure-sensitive microcapsules uniformly distributed therein;

each of said pressure-sensitive microcapsules is filled with a [dye exhibiting] material corresponding to a first single-color, and features a pressure/temperature characteristic to be broken when being subjected to a predetermined pressure within a first temperature range; and

said heat-sensitive color-developing component features a thermal color-developing characteristic to develop a second single color within a second temperature range defined by a first critical temperature and a second temperature, said first critical temperature being in said first temperature range, said second critical temperature exceeding an upper limit temperature of said first temperature range.

7. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 6, wherein each of said heat-sensitive color-developing components comprises a [leuco-pigment] leuco-compound, and said color developing layer is composed of a color developer component for said [leuco-pigment] leuco-compound.

8. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 7, wherein said first temperature is defined as a critical color-developing temperature of the

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[leuco-pigment] leuco-compound exhibiting the thermal color developing characteristic defined by said second temperature range, and said second temperature is defined as a critical color- developing temperature of the [leuco-pigment] leuco-compound exhibiting the thermal color developing characteristic defined by said third temperature range.

9. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 7, wherein the [leuco-pigment] leuco-compound, exhibiting the thermal color developing characteristic defined by said third temperature range, comprises a black-developing [leuco-pigment] leuco-compound.

10. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 7, wherein the [dye] material, encapsulated in said pressure-sensitive microcapsules, is based on a [leuco-pigment] leuco-compound, and said color developer component is thermally fused when being subjected to at least a lower limit temperature of said first temperature range.

12. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 11, wherein the [dye] material, encapsulated in said pressure-sensitive microcapsules, is based on a [leuco-pigment] leuco-compound, and said pressure/ heat-sensitive color-developing layer is composed of a color developer component for said [leuco-pigment] leuco-compound, said color developer component being thermally fused when being subjected to at least a lower limit temperature of said first temperature range.

14. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 13, wherein each of said heat-sensitive color-developing components comprises a [leuco-pigment] leuco-compound, and each of said pressure/heat-sensitive color developing layer and said heat-sensitive

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color developing layer is composed of a color developer component for said [leuco-pigment] leuco-compound.

15. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 13, wherein said first temperature is defined as a critical color-developing temperature of the [leuco-pigment] leuco-compound contained in the heat- sensitive color-developing layer, and said second temperature is defined as a critical color-developing temperature of the leuco- pigment contained in the pressure/heat-sensitive color-developing layer.

16. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 14, wherein the [leuco-pigment] leuco-compound contained said pressure/heat-sensitive color-developing layer comprises a black-developing [leuco-pigment] leuco-compound.

17. (Amended - Marked-Up Copy) A color developing medium comprising:

a substrate; and

a pressure/heat-sensitive color-developing layer coated on said substrate,

wherein said pressure/heat-sensitive color-developing layer is formed as a binder layer containing a plurality of pressure-sensitive microcapsules uniformly distributed therein;

each of said pressure-sensitive microcapsules is filled with a [dye exhibiting] material corresponding to a given single-color, and features a pressure/temperature characteristic to be broken when being subjected to a predetermined pressure within a predetermined temperature range; and

an extent of said temperature range is regulated by varying at least one parameter selected from the group consisting of a thickness of the pressure/heat-sensitive color-developing layer, an amount of filler contained in the pressure/heat-sensitive color-developing layer, an average diameter

of the pressure-sensitive microcapsules, a material of the substrate, a shell wall strength of the pressure-sensitive microcapsules and a surface roughness of the substrate.

18. (Amended - Marked-Up Copy) A color image-forming medium as set forth in claim 17, wherein the [dye] material, encapsulated in said pressure-sensitive microcapsules, is based on a [leuco-pigment] leuco-compound, and said binder layer is formed as a color developer layer composed of a color developer component for said [leuco-pigment] leuco-compound, said color developer component being thermally fused when being subjected to at least a lower limit temperature of said temperature range.